Channels: Where Disciplines Meet

Volume 3
Number 1 *Fall 2018*

Article 6

December 2018

Seeing Green Through the Eyes of National Oil Companies: A Comparison of Gazprom's and Petrobras' Environmental Sustainability

Jesse A. Thompson
Cedarville University, jessethompson@cedarville.edu

Seeing Green Through the Eyes of National Oil Companies: A Comparison of Gazprom's and Petrobras' Environmental Sustainability

Abstract
The case studies of Gazprom and Petrobras are used to compare the interaction and relation between national oil companies, the state government and environmental policy. Specifically the paper seeks to address how the policy and interaction between the state government and the NOCs affect sustainable development of the preservation of the environment. The methodology used is set out by senior research international scholar, Eduardo Viola. He examines the state government's position on the climate through three criteria: reduction of greenhouse gas (GHG) emissions, domestic climate policies and the state's international standing on the issue. The United Nations Framework Convention on Climate Change (UNFCCC) GHG Inventory data, Brazil and Russia's energy strategies and a third-party newspaper reporter will all be used to compare the two case studies. The research discovers that protection of the natural environment is an area of lesser importance to more predominant state goals of energy development and independence and the foreign policy agendas of legitimizing or leveraging the state's energy capabilities towards other nations.

Keywords
Brazil, Environment, Gazprom, NOC, Petrobras, Russian Federation

Seeing Green through the Eyes of National Oil Companies: A Comparison of Gazprom's and Petrobras' Environmental Sustainability

Jesse Thompson
History and Government

Introduction

Having lived in various regions of Brazil I have been able to observe their various attitudes towards energy consumption. When traveling down the Amazon River in Brazil by boat in the early 2000s, I remember watching small floating "gas stations" pass by on the riverside lined with soda bottles or small canisters filled with oil. Wooden canoes with outboard motors would be parked all around the floating station and the locals would be engaged in transactions for the fuel. A few years later as I traversed the larger cities of Brasilia and Natal I noticed the uniqueness of the Petrobras gas stations lining the corners of various street corners. Not only would they be staffed by attendants, but one could ask for either flex fuel or gasoline. Furthermore, certain cars around the cities would be marked with the words "Flex Fuel." Curious, I inquired about the differences between the two. I was told Flex Fuel refers to ethanol, a biofuel from the sugar cane plantations across Brazil. Petrobras became associated as a large proponent for environmentally friendly fuel and technology development in my mind. Later on, I would see large green billboards and posters advertising their success and initiatives in improving the Brazilian environment. Looking back now, it is an interesting comparison of how energy consumption and concern for the environment varies by region in Brazil. Certainly the economic success of the region played a large role in the available fuel options, yet also over time Petrobras has rebranded itself as an environmentally green oil and energy producer (Gabrielli, 2009).

Energy can be harnessed from various forms. Michael McElroy (2010), Professor of Environmental Science at Harvard University, broadly defines energy (of a system) as "the capacity of the system to do work" (p. 78). There are various forms of energy: coal, oil, natural gas, biomass and energy from water and wind. Coal played a dominant role in the industrial revolution originating in England and the rest of Europe. However, more recently coal combustion largely occurs in China, which in 2005 accounted for 44.8% of total world production. Global coal production within the former USSR has decreased since 1973, whereas in Latin America it has gradually increased. McElroy (2010) highlights oil as "the single most essential ingredient of modern industrial society" (p. 123). In 2005, Russia was the second highest world producer of oil at 9.5 million barrels per day, and Brazil was the

fourteenth major producer at 2 million barrels of oil per day. There exist many environmental problems with all stages of oil production, but of particular concern are oil spills, which can contaminate and destroy large sections of the natural environment. Biomass and hydro and solar energy have all recently grown in importance as renewable sources of clean energy. Brazil especially has farmed sugar cane for ethanol production as a means to reduce carbon and GHG emissions (McElroy, 2010).

Closely related with the discussion of energy in our world today are the large industries and corporations that discover and transform the previously mentioned resources into usable energy for consumption by individuals. These companies exist throughout the world and are most readily identified by their presence at gas stations. Royal Dutch Shell, Exxon Mobil, BP and the earlier mentioned Petrobras are amongst the largest gas and oil companies that sell their refined products to local consumers and vehicle owners. These oil and gas companies are either independently owned or controlled by the government and referred to as National Oil Companies (NOCs). In fact, twenty-seven out of the fifty largest oil and gas companies are owned by national governments (Vavilov, 2015). One of the first NOCs was the Yacimientos Petroliferos Fiscales in Argentina in the 1920s. It was not until fifty years later, however, when a large number of NOCs were formed during an era of global nationalism (McPherson, 2003). Today, many NOCs still exist to some degree or another as governments seek energy security. Even more pertinent to the discussion of energy and the state is the environment and concern of climate change. The United Nations (UN) has enacted various agreements and conventions to protect the environment and combat rising global temperatures. This research seeks to examine the relation between NOCs, the state government and environmental protection. Specifically, to discover an answer to the question: How does the policy and interaction between the state government and the NOCs affect sustainable development of the preservation of the environment using the case studies of Gazprom and Petrobras? The paper concludes that protection of the natural environment is an area of lesser importance to more predominant state goals of energy independence and the foreign policy agendas of legitimizing and transmitting or leveraging the state's energy capabilities towards others.

This research paper will first compare relevant contemporary scholarship. Various levels of analysis will be identified, concerning the importance and interaction of various actors on the policy of NOCs towards the environment. Following the literature review, the methodology of comparison of the two NOCs, Gazprom and Petrobras, is laid out in detail. A triangulation method for a qualitative study including data from the UNFCCC, a document analysis of *New York Times* newspapers, and a comparison of Russia and Brazil's energy strategy are all used to identify various aspects of the relation between each NOC, its national government, and environmental policy. Next, a brief case background and overview of Russia and Brazil, their governments, and Gazprom and Petrobras will be covered to provide relevant context and understanding to the specific research analysis. Subsequently, the analysis and comparison of each methodology will be evaluated as the results are noted. Finally, in the conclusion a summary of the research study will be provided with an emphasis on the implications of this research, the limitations of the paper, and future areas of study.

Literature Review

Although broad in its implications and scope, the specifics of the research question need to be fully addressed to ensure the relevancy of the results. The research question states: "How does the relation between the state government and the NOCs affect sustainable development of the preservation of the environment using the case studies of Petrobras and Gazprom?" This question is not only limited in scope but focuses specifically on the interaction of the state government and NOCs. However, surrounding literature and research of the topic of environmental sustainability mentions not only the influence of state actors, but also the influence of private stakeholders and international frameworks and organizations. There appear to be three primary levels of analysis in explaining exterior influences on NOCs and their approach to environmental sustainability: the private stakeholder level, the local government level, and the global intergovernmental organization (IGO) level. A thorough understanding of each level and its relation to NOCs is needed to best determine the importance of selecting the state government and its relation to NOCs.

Many oil and gas companies have begun releasing environmental practices due to the increasing impact and importance of environmental sustainability to private stakeholders and the company's financial health. These reports are typically voluntary disclosed in accordance with the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines. The GRI guidelines measure three factors of sustainable development: the environmental, the economic, and the social performances of the company. The three factors together are collectively known as the 'triple bottom line' of sustainability. Alazzani and Wan-Hussin, associated with the sustainable-society focused Othman Yeop Abdullah Graduate School of Business in Malaysia, analyzed eight oil companies: CHEVRON, NEXEN, OMV, OSL, OXY, Petronas, SK Energy, and TOTAL via the 'triple bottom line method', concluding the companies with prominent investor participation were more devoted to addressing environmental issues and improving stakeholder communication (2013). Similarly, additional research (Clarkson, Li, Richardson & Vasvari, 2008) recognizes the importance of GRI sustainability reports to determine a company or corporation's commitment to protect the environment. Furthermore, the chairman of strategy consultants SustainAbility and globally-acclaimed author John Elkington (1998) write on the effectiveness of long-term partnerships in issues of sustainability between nongovernmental organizations (NGOs) and business companies through a partnership with these stakeholders revolving around voluntary submission of environmental standards. The individual level of analysis is not solely limited to a NOCs private stakeholders but can include the company's interaction with other energy companies. One of the three prominent areas during Petrobras' era of transformation in promoting environmental sustainability included the prompting of other energy companies engaged in trade with Petrobras to implement higher environmental standards (Gabrielli, 2009). This level of influence is also seen through Gazprom's concern for fulfilling its private stakeholder's desire for continued economic growth. Koďousková and Jirušek (2016), researcher for the International Institute of Political Science and Centre for Energy Studies and lecturer of the Energy Security Studies program at Masaryk University, respectively, note Gazprom's agenda to promote profits through low-cost operations towards customers in Western Europe as a

response to private stakeholders, which is often in contrast to the state policy of building energy security and developing trade relations with China. Thus, private stakeholders are actively engaged in shaping a NOCs policy, whether it be profits in general or specifically environmental sustainability.

Within the private stakeholder individual level of analysis, there are two general trends of theories which attempt to explain the cause for voluntary disclosure of an NOC's policy of environmental sustainability. The Voluntary disclosure theory assumes those with high performance records will choose to share their achievements while low performers will seek to disclose less because of the greater cost. In contrast, the political economy theory, legitimacy theory, and stakeholder theory are all similar in their predictions of a negative correlation between environmental performance and the amount of publicity since only low performers are facing pressure and seek to reduce such threats by publishing their environmental practices.

Often times the local government level and private stakeholder level of analysis will overlap or jointly influence each other. Canadian and Brazilian authors Silvestre, Gimenes and Neto (2017), joint-publishing for the *Journal of Cleaner Production*, discuss the need for private companies to develop policies that will complement government regulations to fully ensure protection of the natural environment. It will often be factors, such as health and safety concerns, at the individual company level, which will promote and lead to new health, safety, and environmental regulations by the local government as well as international bodies. Thus a government policy may not be enough to change individual views towards environmental protection, and the company itself must be actively engaged in making a change at the individual level. Elkington (1998) makes mention of the government and government agencies as another alternative for increasing environmental sustainability when engaging in partnerships with NOCs. He combines two schools of thought: voluntary submission of practices to stakeholders and the role of government in determining the environmental sustainable development of companies. Despite these similarities and commonality between both the private investors and local government, it is vital to maintain distinctions between national objectives and commercial objectives (Braga & Szklo, 2014). Ramirez-Cendrero and Paz (2017) trace the development of NOCs in Brazil and Mexico and the importance of political and institutional factors. They conclude "national" and commercial" objectives can indeed coexist, but only during times of high oil prices. Furthermore, as is most often the case, the prevalence of national objectives will hamper the potential of a NOC and its commercial objectives. This opposition between state and institutional objectives is notable with Gazprom's external energy policy. Putin's New Energy Policy seeks to limit foreign investors in Russian state-owned companies, secure sovereignty over natural resources, and strengthen its role in the energy sector. While being utilized by the Russian government to achieve these ends, Gazprom also responds to private stakeholder concerns for economic growth and profits (Koďousková and Jirušek, 2016).

The government plays a significant role in implementing policy and regulation to determine the production and exploration of natural resources. Petrobras' discovery of the

pre-salt province led to federal laws and policies towards production-sharing agreements. Included in these governmental decisions were also stricter guidelines for environmental protection as compared to earlier concession agreements (Braga & Szklo, 2014). The state's government plays a major role in altering practices of oil companies in implementing key areas of sustainable development and can be traced throughout Brazilian history with the monopoly era from 1953–1997 under both the military dictatorship and return to democracy in the mid-1980s, the era of decentralization from 1998–2010 and the hybrid governance arrangement from 2010–2013 (Aguiar & Friere, 2017). Dalgaard (2012) examines how the state of Brazil will engage in energy statecraft and use its energy resources for political purposes. Energy statecraft is often related to the global and intergovernmental level of analysis as each state seeks to use its energy policies at the international level, yet there is a clear level of local government involvement as seen with Brazil's programs to develop and promote biofuels as a sustainable energy source. One must not simply note the presence of a governmental institution in influencing the role of NOCs in environmental sustainability, but one should distinguish between the forms of governmental institutions. Mehlum, Moene & Torvik (2006) differentiate the quality of institutions and their resulting policy towards the conservation of natural resources. They note "grabber-friendly" institutions result in lower total income while "producer-friendly" institutions result in increased income for areas of a high quantity of natural resources.

There are also various international actors, such as IGOs like the United Nations (UN), which have played an influence on a state's environmental agenda. This level of analysis is based off of the second image reversed model[1] coined by Gourevitch (1978), which recognizes external impulses as an influence to domestic interests and institutions. Kasa, affiliated with the Center for International Climate and Environmental Research in Oslo, (2013) addresses the role of these external impulses on Brazil's domestic policy to ensure a cleaner environment. One notable global agenda is the UNFCCC, which has led to increasing concern towards reducing climate change and interest in biofuel alternatives of energy production. The UNFCCC was first adopted and discussed in 1992 at the Earth Summit in Rio de Janeiro, Brazil alongside two other conventions, the UN Convention on Biological Diversity and the UN Convention to Combat Desertification. It then was officially formalized and entered into force in 1994. Since its conception, the UNFCCC has 197 party signatories and has adopted the Kyoto Protocol and the Paris Agreement to limit carbon emissions. "The ultimate objective of the Convention is to stabilize GHG concentrations at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system…to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner" (United Nations Framework Convention on Climate Change, 2016). Furthermore, international or global bodies and organizations, such as the Organization for Standardization (ISO) or Center for Chemical and Process

[1] The second image was originally developed by Waltz in *Man, the State, and War* (1959) in that wars are caused by the domestic fabrication of states. Gourevitch (1978) develops the idea of a second image reversed where war, and more generally international politics, affect the state's structure. Kasa (2013) uses this second image reversed model to discuss the effects of the international community on determining a state's climate policies.

Safety, will typically set additional health and environmental regulations to which NOCs can adhere.

In addition to the UNFCCC the Washington Consensus between Latin and South American states resulted in shifting relations between states and oil companies through global interactions. Although the name may be misleading, the consensus centered on reforms that many states in Latin America were jointly enacting, such as the privatization of state-owned enterprises. This type of intergovernmental cooperation was largely based on neoliberal policies and was representative of a larger global trend seen through the Reagan and Thatcher administrations (Kuczynski & Williamson, 2003). As mentioned earlier, another ideological framework, the conditionalist approach of economic statecraft, utilizes the local government to determine foreign policy. Brazil has used its massive energy base of both natural gas and biofuels to encourage other states, especially developing states in Africa, to develop their own biofuel programs. Yet this distinction of using energy resources at the international level has faced limited success, due to the wrong international context for promoting economic growth and sustainable development in developing states (Dalgaard, 2012). One also sees such international relations determining the viability of energy resources with Russia's Gazprom. Sanctions imposed by the West against Russia have led to a drop in Russian oil prices and have influenced its policy (Koďousková and Jirušek, 2016).

Viola and Franchini compare the various levels of analysis as stated above and ultimately reach the conclusion that the primary influence of determining the climate agenda is the local state policy. They note the weakening of the UNFCCC in recent years and the subjection of NOCs to a growing moderate force in the government, which is open to addressing the topic of environmental sustainability (Viola and Franchini, 2013). In addition, Aguiar and Friere (2017) recognize the importance of such a relationship and seek to understand how state-owned organizations can act "as a facilitator of the implementation of governmental policies." After an analysis of each level of influence and the corresponding interactions between the individual private stakeholder, the local government and international body, it appears the state government holds a significant role in determining the environmental sustainability policies of NOCs. This literature review does not seek to discount the important influences of other actors, but instead delve into a detailed examination and comparison between the governments of Brazil and Russia and their corresponding influence of their NOCs concern for the environment.

Methodology

I seek to answer the research question: How does the relation between the Brazilian and Russian Federation state governments and the National Oil Companies (NOCs) affect sustainable development of the preservation of the environment? My thesis adheres that the protection of the natural environment holds a position of lesser importance to more predominant state goals of energy independence and foreign policy agendas. Specifically, Petrobras has recently increased in its efforts at environmental preservation in line with its biofuel production and as a means of transmitting and legitimizing its foreign policy

objectives, whereas Russia seeks to primarily utilize Gazprom's leverage on its European neighbors, which often lacks consideration for sustainable development and environmental preservation.

It is first necessary to compare scholarly literature in regard to the role of private investors, the state and international bodies on NOCs, determining which level of analysis is best for examining the NOC's preservation of the environment. I then follow the methodology set out by senior research international scholar, Eduardo Viola. He examines the state government's position on the climate through three criteria: reduction of GHG emissions, domestic climate policies, and the state's international standing on the issue (Viola and Franchini, 2013). These three qualitative areas provide a multi-method of triangulation to reduce the weakness in choosing any one criteria. In examining the reduction of GHG emissions, data from the UNFCCC (GHG) Inventory will be used for comparison. GHG include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, and nitrogen trifluoride. Data for both cases overlaps within the range of 1990–2012. In regard to determining domestic climate policies, an examination and comparison of Brazil's and Russia's most recent energy strategies will be conducted. The key words: environment, sustainable development, climate, energy efficiency and pollution, all concerning environmental preservation and sustainable development, will be identified and compared in the frequency and scope of usage. Finally, an independent news reporter, *The New York Times*, will constitute the method of examining the state's international standing on the issue of NOCs and the preservation of the environment. Relevant articles dealing with Petrobras and Gazprom in the past ten years will be analyzed for general positive or negative perceptions of each NOC. *The New York Times* is a valid grounds for comparison since its reporters are unbiased third-party individuals who do not profit from false reporting. These various methodologies will then be jointly presented to determine the relationship between the government and NOC's sustainable development and preservation of the environment.

Historical Background

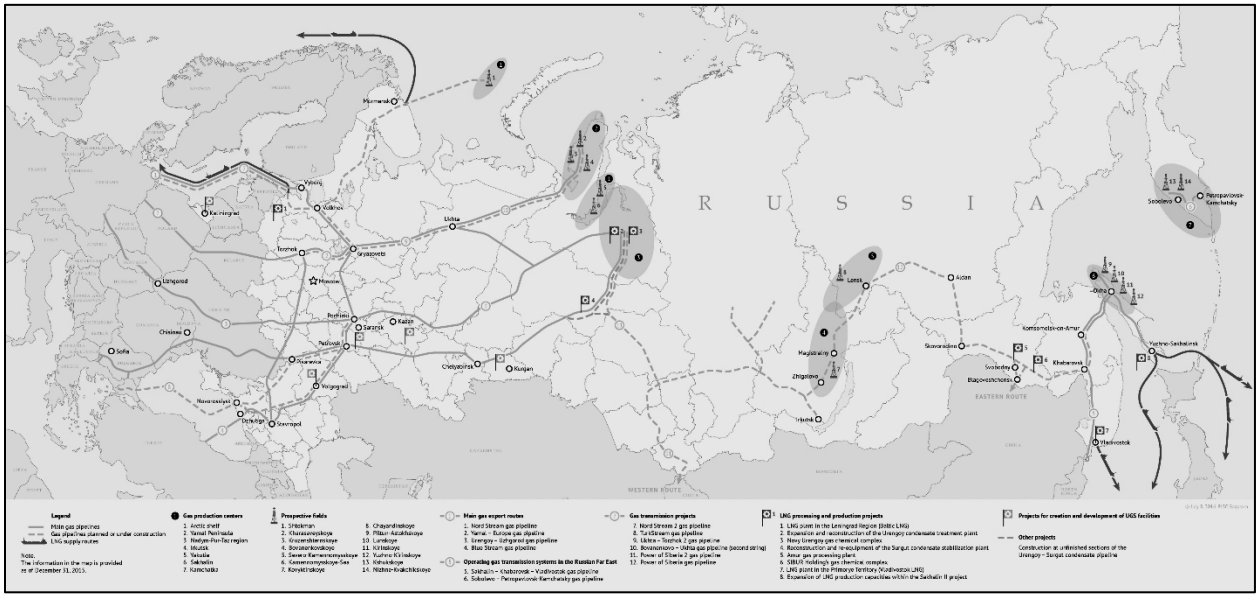
The national cases of Petrobras and Gazprom are chosen because of the similarities between the Federative Republic of Brazil and the Russian Federation. Each state is a major regional power; has a large landmass, coastline, population and amount of natural resources; and possesses successful NOCs. However, it is important to note differences in governing structures and the level of democracy between the two states. The following sections of both case studies will outline a brief history of both the governments and energy companies, Gazprom and Petrobras.

Case 1: Russian Federation and Gazprom

Russia is the largest state in the world with a landmass totaling 16,377,742 square kilometers. It has 37,653 kilometers of coastline and borders fourteen other countries. Russia is divided into forty-six provinces, twenty-one republics, four autonomous okrugs, nine krays, two federal cities and one autonomous oblast—a total of eighty-three administrative units in addition to its disputed claims to the Autonomous Republic of Crimea and the municipality of Sevastopol (Central Intelligence Agency, 2018). Its natural

energy resources are predominantly located in the Urals Federal District and near the Barents Sea. Thus, over 80% of the natural gas in Russia is within the Arctic Circle (Vavilov, 2015). The majority of the population of 142,257,519 is found in the western end of the nation. The Russian Federation is a semi-presidential federation with a president who appoints the premier and ministers in the government cabinet. The legislative branch consists of two members from each administrative unit chosen through a mixed electoral system (CIA, 2018). Initial economic planning of Russia's natural hydrocarbon resources began under the Soviet Union with oil explorations in the Caspian region in the 1950s followed later by the development in western Siberia (Belyi, 2015).

Gazprom controls one-sixth of the world's reserves of natural gas and is one the largest NOCs in the world, being the third largest publically traded company in 2008. In 2012, the company accounted for 8% of the Russian GDP, roughly $161 billion. The company was formed in 1989 as a replacement for the Soviet Ministry of Gas Industry. Gazprom was initially granted full control over domestic gas production, but in 1990 and 1994 experienced some privatization and became a joint-stock company. The Russian government still holds the majority of the shares and is the authoritative voice in determining Gazprom's long-term strategies. Gazprom primarily exports to Europe, specifically the former USSR and former Soviet countries, because of the large inflexible pipeline network developed during the era of the Soviet Union (Vavilov, 2015). US Army Captain Alexander Ghaleb (2011) observes that the energy sector and natural gas are at the center of Russian diplomacy and that president Putin seeks to use the nation's natural resources to achieve the national strategy.

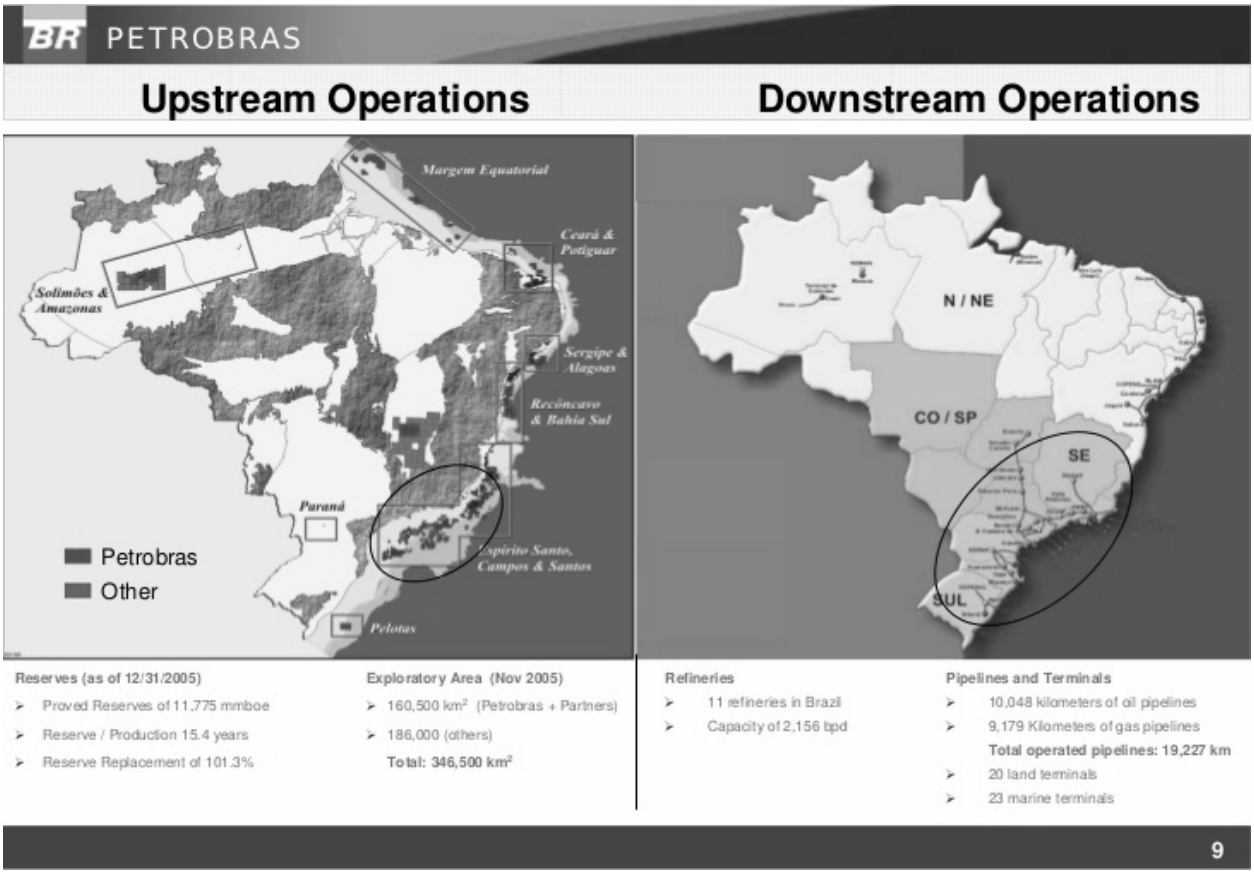


Map 1: *Gazprom Group's gas business development; Map taken from Gazprom (2018)*

Case 2: Brazil and Petrobras

Brazil, the largest country in South America, and the fifth largest in the world, totals 8,358,140 square kilometers. It has 7,491 kilometers of coastline and borders ten nations. The majority of Brazil's population lives along its Atlantic coast in the major cities of Sao Paolo and Rio de Janeiro. Latest results on Brazil's population number it at 207,353,391. Brazil is divided into twenty-six states and one federal district. It is a federal presidential republic, where the president serves as both chief of state and as head of government, appointing the cabinet. The bicameral legislative branch is composed of the Federal Senate, which is elected by simple majority and the Chamber of Deputies, elected by proportional representation. Brazil is the eighth-largest global economy despite recent political corruption, which has affected associated businesses (CIA, 2018).

During the imperial era of Brazil, oil was discovered in the northeastern section and, in 1927, the mineral resource was nationalized by laws limiting the exploration to Brazilians. The National Petroleum Council was created in 1938, leading to the creation of the state company, Petrobras, in 1953. The Campos Basin was discovered in 1974 and is the largest oil producing region in Brazil. During the 1970s, Petrobras was gradually privatized and allowed to engage with other foreign private companies in extracting and producing its natural resources. In 2007, the "pre-salt" layer in the Tupi reservoir off the Brazilian coast was discovered to contain approximately eight billion barrels of oil, strengthening Petrobras' standing as the largest company in Brazil and eighth-largest in the world based on market value. As a state monopoly, Petrobras is subject to the Ministry of Mines and Energy, the National Agency of Petroleum, Natural Gas and Biofuels, and the National Council of Energy Policy, which manage the exploration and production of the energy resources (Pereira, 2016).



Map 2: *Petrobras Operations; Map taken from Petrobras (2010)*

Analysis and Results

UNFCCC Data on GHG Emissions

Data concerning the GHG and carbon-dioxide (CO_2) emissions is provided by the UNFCCC, created in 1992 as a framework for the reduction of global temperature increases through the reduction of carbon emissions and other GHG. The Kyoto Protocol of 1995 and the Paris Agreement of 2015 are two major treaties seeking a global response to climate change (United Nations Climate Change, 2014). There exist two categories of countries within the UNFCCC, Annex I countries and non-Annex I countries. Annex I countries are those developed states that are already industrialized and "the source of most past and current GHG emissions." Non-Annex I countries are developing countries without the same level of industrialization. The regularity and specificity of reports differ by category with Annex I countries adhering to stricter criteria (UNCC, 2014). The Russian Federation is an Annex-I country, whereas Brazil is a Non-Annex I country. Major sources of carbon emissions are energy industries, transportation, industrial processes, solvent and product use, agriculture, waste disposal, land use, and land-use change and forestry (UNCC, 2014).

The Russian Federation, from 1990 until 2015, experienced a 35.49% decrease in CO2 emissions and 29.63% decrease in GHG emissions (see Table 1). Following the Doha Amendment to the Kyoto Protocol, the agreed standard among Annex-I countries is to reduce GHG emissions by 18% of 1990 levels by 2020 (UNFCCC, 2012). The Russian Federation is well within achieving this goal and has reduced emissions from all major sources of carbon and GHG emissions except for waste (UNFCCC, 2018). When comparing data of the breakdown of GHG emissions within the energy sector between 1990 and 2015 in the Russian Federation (Figures 1 & 2), there is an increase of 9.24% in fugitive emissions from fuels. All other categories except for unspecified items are proportionally similar with a 2% variation. From 1990 until 2012, Brazil experienced a 126.46% increase in CO2 emissions and 78.75% increase in GHG emissions (see Table 2). Within the energy sector of Brazil, GHG emissions primarily are a result from transport, which composed 44.14% of energy GHG emissions in 1990 (Figure 3). Data from 2012 is unavailable to compare, yet in comparison to the Russian Federation, Brazil's energy industries are responsible for only 12.16% of GHG emissions as opposed to Russia's 38.06% in 1990. As a Non-Annex I country, Brazil is not held to the same standard as Russia. Instead it must report on the steps it is taking to implement the UNFCCC. These commitments are laid out in Article 4.1 and 12 of the convention (UNCC, 2010). The primary sources of increase within Brazil of carbon and GHG emissions are energy, industrial processes, agriculture and other (UNFCCC, 2018).

Although both the Russian Federation and Brazil possess many similarities, the development of their industries and GHG emissions vary vastly. A direct comparison of emissions between the two is unwise. Yet the UNFCCC data still provides relevant information when analyzing the governments and their NOCs. Both states were able to reduce their GHG emissions from land use, land-use change and forestry (LULUCF) and experienced an increase in emissions resulting from waste. Brazil has expanded its overall emissions, whereas the Russian Federation has reduced its emissions. Russia, as an industrialized nation, still surpasses total Brazilian GHG emissions by over 1,500,000 Gg.[2] With these considerations in mind, when examining international opinion and the government's energy strategy for Russia and Brazil, it will be important to identify the corresponding rhetoric and priorities of each country. It should be expected Russia will

[2] Gigagrams (Gg) are a unit of mass equaling 1,000,000,000 grams

seek to maintain and operate closely with the international standards already in place, whereas Brazil will seek to strongly develop its energy industries.

Table 1: ***Emissions Summary for Russian Federation (in Gg)***

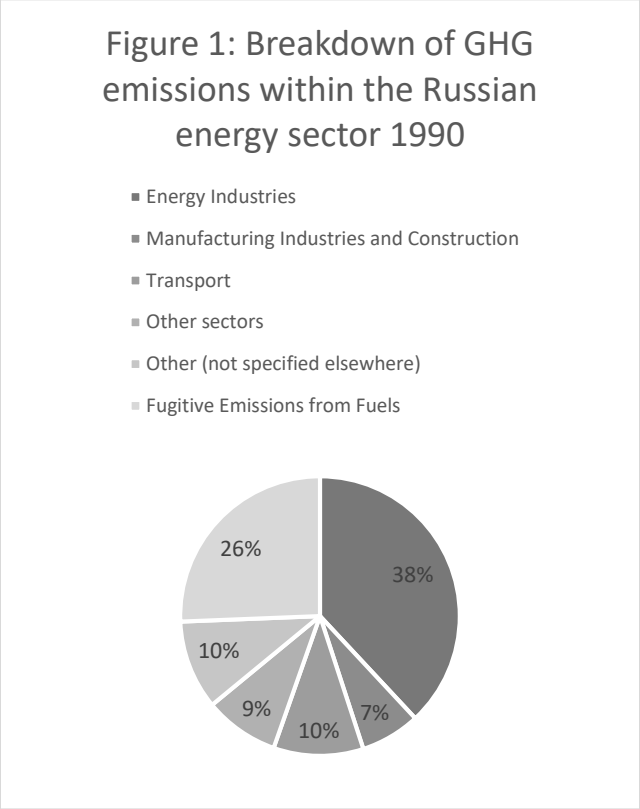
	1990	2000	2015
CO2 Emissions without LULUCF/LUCF	2,589,895.6	1,504,292.5	1,670,809.5
GHG Emissions without LULUCF/LUCF	3,767,792.0	2,273,165.9	2,651,212.0

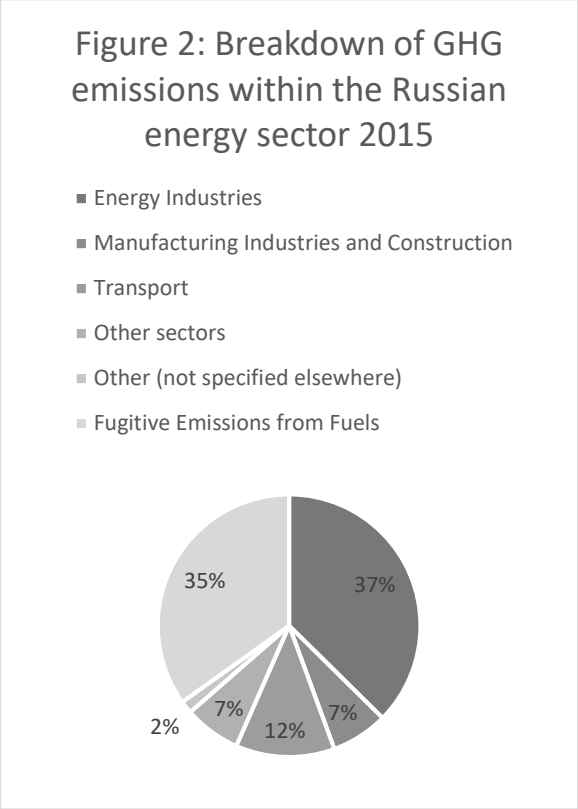
Table and Data taken from UNFCCC

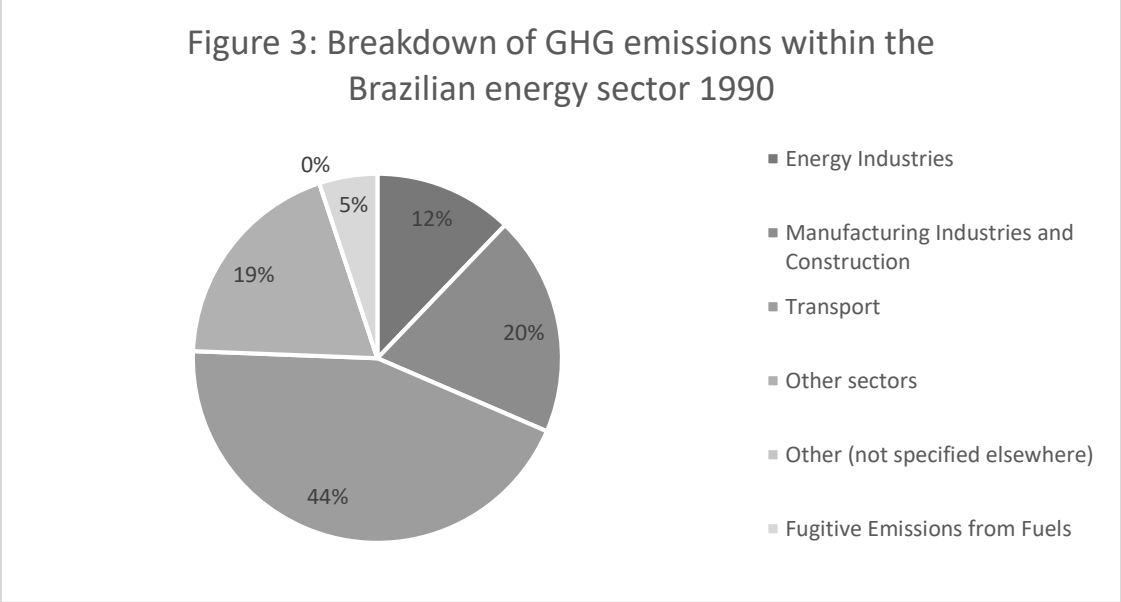
Table 2: ***Emissions Summary for Brazil (in Gg)***

	1990	2000	2012
CO2 Emissions without LULUCF/LUCF	213,555.0	340,411.0	483,623.0
GHG Emissions without LULUCF/LUCF	550,872.0	745,429.7	984,692.2

Table and data taken from UNFCCC







New York Times Content Analysis

When engaging in the *New York Times* study, to evaluate and analyze each state's international standing towards the environment, the NOC, and the state government, I chose eleven reports that were relevant to the Russian Federation and six articles that were relevant to Brazil. Table 3 outlines the years and subjects of each story. As noted earlier, articles were chosen from the *New York Times* within the time frame of January 1,

2008 until March 15, 2018. The time frame was extended to ten years to provide an overview of contemporary history with both NOCs while not being limited to recent events such as the Petrobras scandal beginning in 2014. A limit of a ten year timeframe was given due to the volume of *New York Times* articles and the limited time frame to conduct a qualitative analysis. We searched for articles for the Russian Federation under the key term "Gazprom" with the inclusion of the modifiers "environment" and "Russia." Out of the articles available on the *New York Times*, I chose relevant articles within the scope of this research that addressed various instances of Gazprom. Some relevant articles were removed due to repetition of other news articles. The Brazilian articles were discovered using the search word "Petrobras" and the inclusion of the modifiers of "Brazil" and "environment." The available article selection was limited in number, yet articles were chosen using the same process of relevance.

Table 3: Timeline, Subject and Perception of *New York Times* articles

Year	***Russian Federation***	***Perception***	***Brazil***	***Perception***
2008	Gazprom and Russia BP Environmental Inquiry Gazprom and Coal	- negative - negative - negative		
2009	Russia Cuts Gas Europe and Clean Energy	- negative - negative		
2010	Gazprom in Cuba	- negative		
2011	Russian Arctic	- negative	Stall in Renewables	- negative
2012	EU Investigates Gazprom	**- positive**	Earth Summit in Brazil Brazil's Oil and Women	**- positive** **- positive**
2013	Greenpeace Charged	- negative	Petrobras' Failings	- negative
2014	Russia Losing European Energy Markets	**- positive**	Petrobras' Scandal	- negative
2015	Oil Exploration in Arctic	- negative	Petrobras' Corruption Scandal	- negative

As noted by Table 3, Russia and Brazil each only have two reports with positive environmental perceptions, with three occurring in 2012 and one report written in 2014. The other nine articles dealing with Russia had some form of negative connotation while Brazil had four articles with a negative perception. The Russian articles concerning "Gazprom and Russia" (Kramer, 2008), "Russia Cuts Gas" (Kramer, 2009), and "Europe and Clean Energy" (Kanter, 2012) all discussed the close collaboration between Gazprom and

the Russian government without any mention from either entity of environmental concern. "BP Environmental Inquiry" (Kramer, 2008) was deemed negative despite its title since the author implies how environmental concern was used as a cover for political and economic ambitions. The article "Gazprom and Coal" (Kramer, 2008) discussed coal usage, a form of energy leading to high amounts of pollution. "Gazprom in Cuba" (Kramer, 2010) concludes with a section describing the lack of safety and environmental concern in the off-shore drilling process. Finally, "Russian Arctic" (Kramer, 2011), "Greenpeace Charged" (Myers, 2013), and "Oil Exploration in Arctic" (Myers & Krauss, 2015) all deal with Arctic exploration, which is seen negatively as a major environmental threat. Three of the six *New York Times* articles mentioning Brazil dealt with the political corruption: "Petrobras' Failings" (Romero, 2013), "Petrobras Scandal" (Romero, 2014), and Petrobras Corruption Scandal" (Horch, 2015). These articles are seen negatively through the absence of any environmental discussion and the implications that government corruption lacks a concern for the environment as opposed to other political objectives. "Stall in Renewables" (Bevins, 2011) also mentions environmental concern unfavorably as Petrobras seeks to expand its pre-salt oil discoveries at the cost of increased GHG emissions. Summing the perceptions of the newspaper articles, it is found that the *New York Times* views Gazprom positively 18% and views Brazil positively at 33%.[3] It can be concluded Petrobras is seen in a better light with better care for the environment. The following paragraphs describe the content and perceptions of the *New York Times* articles in greater detail.

The European Union's (EU) energy strategy emphasizes the need to protect the environment and limit climate change through such means as "decarbonization" and use of renewable resources. Natural gas has become a major component of a cleaner energy program as it supplements the use of renewable energy sources. By 2012 there had been discussion of developing a natural gas pipeline that bypasses Russia from the Caspian to the EU. Russia is opposed to such plans, instead seeking approval of its own South Stream pipeline to European nations (Kanter, 2012). Thus, Russia not only possesses a vital energy resource that the rest of Europe seeks to utilize, but negotiations between the two would emphasize greater environmental protection within the energy industry.

[3] The percentages were calculated by dividing the number of positive articles by the total number of articles examined in the content analysis.

Map 3: Proposed Caspian and South Stream pipelines; *Map taken from Kaya (2016)*

In contrast though is Gazprom's acquisition of the Siberian Coal and Energy Company in 2008, expanding its energy production to include coal. Russia has decreased its carbon emissions enough according to international standards to be able to engage in coal production, yet such an action causes concern for long-term environmental strategy as natural gas resources deplete and Russia seeks alternative sources for domestic energy (Kramer, 2008). The Russian Federation has also greatly been interested in development of the Arctic. Climate change and rising temperatures have opened the Arctic Ocean to increased navigable routes and natural resources. In 2011, then Prime Minister Putin, advocated increased exploration and development of the Arctic region as excellent business opportunities, especially within the oil industry (Kramer, 2011). One such area, the Shtokman, a gas field near the Barents Sea, was an important investment for Gazprom during a large portion of the 2000s.Yet by 2015, despite attempts by Gazprom to build an energy powerhouse near the Arctic, little progress has been made in developing the Arctic. Although environmental concerns had an influence in turning investors away from the Arctic, much larger factors were at work in halting development in the Arctic. Economic sanctions by the USA, extreme Arctic conditions, cost of development, and a drop in natural gas prices are the key risks and inhibitors that have halted expansion. However, Russia still maintains invested interest in the region as reporters Myers and Krauss note "the Arctic is at the core of the nationalist ambitions of Mr. Putin, who once said that tapping the region's resources was as natural as hunting and harvesting berries and mushrooms" (2015). In 2013, the Russian government charged members of Greenpeace for trespassing and interfering with its offshore oil platform in the Arctic. The harsh charges and strong use of force to seize the Greenpeace vessel created an international incident and revealed "the importance of the country's Arctic strategy" (Myers, 2013). Russia's disregard for the ship's

agenda in creating international awareness of the environmental hazards of energy development in the Arctic has negatively impacted Russia's overall voice on environmental safety and instead emphasized its desire for Arctic development. In 2006 and 2008, Russian environmental agencies issued investigations against Royal Dutch Shell and BP, respectively. Although revealing some public concern for environmental protection, Kramer attributes the investigations as means of political pressuring. After such allegations, Royal Dutch Shell sold its claim to the Sakhalin Island natural gas and oil development to Gazprom. Following Gazprom's purchase, all environmental investigations and charges were dropped. In the case of BP, the environmental investigation came immediately after a BP employee was arrested for industrial espionage (Kramer, 2008). Gazprom has expanded its operations internationally, purchasing oil shares for offshore drilling in Cuba in 2010. Kramer notes several environmental concerns with such a move, including the fact that it was beyond the reach of US safety regulators, there was a lack of experience of Russian off-shore oil drilling, and there was also a lack of clean-up and containment equipment available in case of a well blowout or oil spill (Kramer, 2010).

Gazprom has had very close connections with the Russian government since its conception as the national gas company. In 2008, Gazprom's chairman, Dmitri Medvedev, was selected by Putin as the next president. Kramer (2008) notes that:

> When Mr. Putin was still president, he used Gazprom's wealth and economic might to fight political enemies inside Russia, to reassert influence over former Soviet republics, to gain leverage over Western European countries by increasing their dependence on Russian gas, and to wrest Russian energy assets back from foreign companies (para. 10).

During the month of January, 2009, Gazprom ceased its exports of natural gas to Europe over disputes with Ukraine. Putin was heavily involved with the escalation of the crisis by taking a hard line against Ukraine (Kramer, 2009). In 2012, the EU also opened an antitrust investigation against Gazprom for unfair pricing towards differing regional blocs, favoring former USSR states (Vinocur, 2012). Furthermore, critics, such as Richard Moncrief, accuse Gazprom of using the government to keep its strong international energy standing. Moncrief claims he is the rightful owner of 40% the Yuzhno-Russkoye field, to which Gazprom dismisses his claims and contract. The Russian government has also been actively involved with meeting foreign-owned energy companies during periods of negotiations, as in the case of the Kovykta gas field. Often times the government's agenda is beneficial to Gazprom's commercial growth, such as increasing gas prices on nearby democratic neighbors with underlying foreign policy objectives (Kramer, 2008). Yet since 2014, Gazprom's dominance in Europe has slowly lessened as European sanctions[4] have limited the export of technology to develop new oil fields and cheaper gas prices. Stanley Reed concludes Gazprom is slowly losing its influence and strong market in Europe. Yet at the

[4] COUNCIL REGULATION (EU) No 960/2014 placed "restrictions on the sale, supply, transfer or export, directly or indirectly, of certain technologies for the oil industry in Russia in the form of a prior authorisation requirement… In addition, the provision of services for deep water oil exploration and production, arctic oil exploration and production or shale oil projects should be prohibited."

same time, Gazprom's natural gas is still as important as a clean energy source as opposed to European coal, which the European Union is gradually seeking to replace via renewable energy sources (Reed, 2014).

As Brazil's largest energy, extraction and petroleum corporations covered large costs and supported environmentally friendly options at an earth summit in Rio de Janeiro in 2012. Notwithstanding this seemingly positive environmental support, many environmental activists are opposed to the projects of these companies as environmentally dangerous as in the case of the Belo Monte dam. Yet the Brazilian government has stated it still seeks to include these industries to "bring these industries closer to environmental-friendly standards (Barnes, 2012)." Petrobras specifically has set high standards of production for itself in the next ten years to surpass other Latin and South American global producers of energy in light of its deep-sea oil deposit discovery. Despite these ambitions, Brazil faces various obstacles and charges of corruption as it seeks to develop its industry. In 2007, Petrobras made discoveries of oil off the coast in the deep-sea areas in the pre-salt layers[5]. Although the NOC has invested heavily into these newer reserves, the project is costly and there is a lack of crude oil refineries. Yet the development of pre-salt oil extraction will also have a negative towards future sustainable development and result in an increase of GHG emissions. Vincent Bevins (2011), reporting for *The New York Times*, quotes Mr. Boechat, professor and specialist in sustainability, that "this will likely become a very serious problem. I don't think Brazil, or most of Latin America, will end up soon making the choice to ensure big emissions reductions just for the sake of increased responsibility" (para. 4). Vincent Bevins notes the big oil discovery has removed attention from the development of renewable resources and that oil and natural gas are often directly opposed to sources of renewable energy. As Brazil seeks to invest in its oil fields, the large financial costs remove monetary resources and potential investment from its cleaner energy initiatives. South American nations still only make up a small proportion of global output of renewable energy. Additionally, increased investment in oil creates a dependence on petroleum which poses a challenge to its agenda of sustainable development (Bevins, 2011). With the rise of onshore shale formations, there has been a reduced demand for oil and natural gas extraction in harder to reach areas. As a result, Petrobras has recently struggled to keep up with the energy demands of its population, having to import not only gasoline but ethanol as well. Petrobras has also faced increasing debt as major projects are placed on hold. Romero (2013) notes there are accusations that these woes were furthered by previous president Rousseff in 2012 as she sought "to shield the Brazilian population from the nation's economic slowdown (para. 4)" by creating jobs. Another specific instance is the requirement of Petrobras to purchase its naval vessels and oil platforms from local shipyards as a means of achieving political objectives. These goals are accomplished

[5] The deep sea is the lowest layer of the ocean beyond the continental shelf and will often hold pre-salt layers. Pre-salt is formed from sedimentary rock and other organic material that accumulate in the depressions between two continental shelves which is then trapped under a layer of salt from the ocean. Pre-salt deposits are common on the American and African continental plates (Petrobras, 2018).

through the creation of thousands of jobs from Petrobras' purchases and the promotion of domestic industries, which provide short-term economic success and boost the popularity of the current governing political party (Romero, 2013).

In areas of potential corruption, Ms. Foster, appointed to the chief position of Petrobras in 2012, has been questioned concerning contracts awarded to her husband's firm (Romero, 2012). Furthermore, the political scandal leading to president Rousseff's removal was deeply interlinked with Petrobras. Mr. Costa, a former executive, was investigated for accepting bribes to award contracts to certain contractors and using that money to support the Workers Party. Although the corruption allegations had much larger political impacts, the *New York Times* reports that:

> Analysts say that the oil giant and other state-owned companies remain vulnerable to kickback schemes for one overriding reason: Presidents in Brazil rule in coalitions at the mercy of Congress, which includes more than 20 parties of various ideological stripes. It's Corruption 101: You get control of a state enterprise and then channel resources from it to the parties in your coalition (Romero, 2014, para. 24).

Since Petrobras has been strongly supported by the government, it has grown very large, with some noting it is responsible for close to one-tenth of the country's total economic output. Due to its size and influence, Petrobras' financial recessions as a result of the corruption has had a negative impact on other Brazilian companies. The bond market has faced a severe collapse since Petrobras was valued as the benchmark for all other national companies. Regardless of the recession and Petrobras' failings, few think that Petrobras will default on its bonds since it is simply too important and large for the government to let it fail (Horch, 2015). Though the *New York Times* articles concerning Petrobras and the environment were scarce, they revealed many of the underlying problems facing the NOC. In one article, *Brazil Where Oil and Women Mix Powerfully*, dealing political corruption, Romero (2012) adds the following sentence: "doing so [increasing oil output] will require guiding Petrobras, Latin America's largest company, past equipment bottlenecks, the development of complex new drilling technologies and concerns over spills at offshore fields" (para. 19). Romero sees these environmental concerns as challenges that can be overcome by the largest energy company in Latin America. This article seems to be the one exception in dealing with political corruption where Petrobras is seen as actively confronting environmental challenges. Petrobras has active environmental and restoration projects in place, yet its international perception is marred by challenges as it seeks to develop.

Thus far independent third-party data has been examined to compare the relation and influence of the state on the NOC of Gazprom and Petrobras concerning the environment. Overall, there is a predominant negative perception regarding environmental concern with Gazprom and Petrobras. Eleven of the seventeen *New York Times* articles[6] directly note the

[6] As Gazprom Goes, So Goes Russia (2008); BP Faces Environment Inquiry in Russia (2008); Russia Cuts Gas, and Europe Shivers (2009); Warming Revives Dream of Se Route in Russian Arctic (2011); Greenpeace

relation between the NOCs and the state in regard to policy or political objectives. There were four articles: "EU Investigates Gazprom" (Vinocur, 2012), "Earth Summit in Brazil" (Barnes, 2012), "Brazil's Oil and Women" (Romero, 2012), and "Russia Losing European Energy Markets" (Reed, 2014), which had a positive perception of the NOCs by noting the benefits of gas as a cleaner energy source or progress towards better environmental protection. Overall, Petrobras held a better third-party perception than Gazprom, with 33% of its articles mentioning Petrobras' environmental activities favorably as opposed to Gazprom's 18% positive perception rate of articles.

Country Energy Strategies

The final section of the research analysis is a comparison of the energy strategies in Russia and Brazil.[7] Each document is evaluated based on the frequency of key terms concerning the environment and the detailed and relevant scope of environmental approaches and strategy concerning the environment. An essential detail to emphasize when discussing the frequency of each term is the length of each strategic report. The Russian Federation's report totals 169 pages of energy policy, whereas the Brazilian report consists of 264 pages of energy policy. Thus, one should anticipate a greater frequency of the terms in the Brazilian energy plan. The key terms searched for in these reports are: environment (and environmental), sustainable development, climate, energy efficiency and pollution. Brazil's energy strategy has not been translated into English and thus the corresponding words searched for are: (*meio*) *ambiente*, (*desenvolvimento*) *sustentável*, *clima*, *eficiência energética* and *poluição*. Table 4 provides a list of the words examined and the frequency of appearance of each word. It is important to note some usages of the words are not included in the frequency of the table because of the surrounding context. An example of a removed term would be "managing a complex industrial environment" as opposed to "the protection of the natural environment." The terms "sustainable development" and "energy efficiency" are included as they are typically associated with environmental concerns.

Activists May Face Russian Piracy Charges (2013); Russia May be Losing Influence Over European Energy Markets (2014); Melting Ice Isn't Opening Arctic to Oil Bonanza (2015); Brazil, Where Oil and Women Mix Powerfully (2012); Petrobras, Once Symbol of Brazil's Oil Hopes, Strives to Regain Lost Swagger (2013); Scandal Over Brazilian Oil Company Adds Turmoil to the Presidential Race (2014); and Corruption Scandal at Petrobras Threatens Brazil's Economy (2015)

[7] The documents analyzed are the Ministry of Energy of the Russian Federation's *Energy Strategy of Russia for the Period up to 2030* (2010) and the Ministério de Minas e Energia's (2007) *Plano Nacional de Energia 2030*.

Table 4: Word Count and Frequency[8] of Key Terms from Energy Strategy Reports

Terms	Russian Federation	Brazil
Environment	*63 - word count* *2.68 - frequency*	*204 - word count* *1.29 - frequency*
Sustainable Development	*17 - word count* *9.94 - frequency*	*28 - word count* *9.42 - frequency*
Climate	*4 - word count* *42.25 - frequency*	*15 - word count* *17.6 - frequency*
Energy Efficiency	*33 - word count* *5.12 - frequency*	*156 - word count* *1.69 - frequency*
Pollution[9]	*36 - word count* *4.69 - frequency*	*32 - word count* *8.25 - frequency*

The Russian Federation had sixty-three word counts of the environment in its strategic report. The word was used to recognize failures of matching "world environmental standards (page 29)" as well as areas of environmental improvement (page 35). The Russian Federation provided a moderate scope of environmental protection as it noted environmental concerns and standards for its various energy industries (i.e. coal, oil and hydroelectric power). The long-term energy strategy includes "environmental safety of the energy sector (page 24)." The report analyzed noted that the energy sector is one of the major sources of environmental pollution, accounting for 70% of the emitted GHG and 50% of air pollutants. The Russian Federation seeks to improve environmental safety "by minimizing the negative impact of extraction, production, transportation, and consumption of energy resources on the environment and climate (page 35)." It also seeks to enact stricter environmental regulations and requirements (page 35), including environmental audits of energy companies (page 36). There is also emphasis on the achievement of "innovation and scientific-and-technical policy in the energy sector (page 45)" through the development of various technologies.

The term "climate" was almost exclusively used alongside the term "environment", except for one instance in which an agreement to climate change was referenced. The topic of climate change was not cited as a concern for reducing GHG emissions and pollutants. As noted in Table 4, the term "pollution" describes various pollutant emissions and wastes. Within the Energy Strategy of Russia for the Period up to 2030, waste pollution was referenced nearly twice more often[10] than GHG pollutants and emissions. Except for the term "pollution", Brazil surpassed the Russian Federation in the frequency of the measured environmental indicators. Yet when the length of the two reports are compared, the

[8] To compare the frequencies of the word while accounting for page differences, I calculated the total number of pages on policy divided by the number of word occurrences to identify the average number of pages for each word.

[9] Pollution included the terms: pollutant emissions, greenhouse gas emissions, and waste

[10] There are 23 references to waste as opposed to 13 references to environmental pollution, pollutants, and GHG emissions.

average occurrence of the words per page is roughly similar in the categories of environment and sustainable development. There is a large discrepancy with the usage of climate and moderate differences with the discussion of energy efficiency and pollution.

Brazil contained 204 recorded usages of the word "environment" or "environmental". A significant number of these occurrences were "socio-environmental" concerns, which addressed both local populations and environmental areas (page 81). The idea of environmental protection is intricately connected with energy efficiency (page 246) and energy security (page 251). These ties suggest the Brazilian government elevates concern for the environment within its energy policy. Mentions of the Ministry of the Environment (page 83) and UN environmental acts (page 187) are frequent, noting their influences on energy strategies. Similar to the Russian energy document, Brazil also distinguishes between its natural resources. Concern for the environment is addressed with its petroleum industry (page 123), its natural gas (page 140), and biomass fuels (page 155). One particular area highlighted within the energy report of Brazil is its ethanol usage. The Brazilian government highlights its use of ethanol in opposition to natural gas as a means of reducing its environmental impact (page 29). Compared to the Russian report, there is a greater connection between the environment and hydroelectric power (page 82) and the implementation of solar plants (page 190).

As noted earlier, the term "climate" in the Brazilian strategy is mentioned nearly four times more frequently than in the Russian strategy. There is also a prevalent focus on the topic of climate change with the Brazilian national plan (pages 48-51). Furthermore, when discussing the issue of pollution, the words "emissions", "pollutants", and "GHG" occur much more frequently than the word "waste", at a ratio of 23:9. There were significant more mentions of energy efficiency and sustainable development in the Brazilian report compared to the Russian report. There are various potential explanations to a divergence in the frequency of such topics. As noted in the UNFCCC data, the Russian Federation is already considered a developed state and significantly more advanced in its industry than Brazil's current level of development. An emphasis on sustainable development and energy efficiency may be in reference to their classification of developing state and their progress towards improving their energy industries to meet the standards already attained by more advanced states.

Having used a model of triangulation and comparing independent data from three sources it now remains to develop a coherent picture of the actual relation between the government, NOC, and environmental protection, specifically GHG emissions. The Russian Federation has managed to stay within the international framework established by the UNFCCC as seen through its decrease in GHG emissions from 1990 until 2015. This international standard is further emphasized within the Russian energy strategy with its focus on enforcing stricter local policy to match international standards. Yet despite these achievements and aims, the *New York Times* only mentions Russia's and Gazprom in a positive environmental light in four articles. There is an increased emphasis on the use of energy as a means for achieving foreign policy objectives. Not only seen with the pipeline crisis between Ukraine and Gazprom, but Gazprom's other interactions with Europe and its

projected South Stream pipeline illustrate the government's use of the NOC for exerting its power and influence. Also of considerable notice is the lack of references to climate change and its prevention. When compared with news stories of Russia's ambition of Arctic exploration and energy development, one identifies Russia's greater priority on utilizing changes within the environment for developing its energy industries. Whilst comparing data from the UNFCCC, it was noted Brazil's status as a developing state and an emphasis on developing these technologies. Furthermore, its GHG emissions has greatly increased from 1990 until 2012. When analyzing observations from the *New York Times*, one finds an emphasis on some limited environmental concern by Petrobras and other major Brazilian energy companies. Yet there is also a noted disconnect between the development of renewable energy and the development of oil production, illustrating the Brazilian focus on energy production and development over concern for green energy. Furthermore, it is interesting to note Brazil's emphasis on energy efficiency and sustainable development. The use of these terms would be expected considering Brazil's status as a non-Annex I participatory state. Based on the data and reports analyzed, I conclude that protection of the natural environment is an area of lesser importance because Russia has more predominant goals of energy development and foreign policy agendas, leveraging the state's energy capabilities towards its neighbors, as seen by the predominantly negative perception of the *New York Times*. Russia has achieved the required international standards set by the UNFCCC and largely seeks to remain within its framework. The UNFCCC has set the standard for Russia to decrease its GHG emissions, which it has done with 29.63% decrease from 1990 to 2015. This conclusion is also supported by Russia's increased focus on pollution within its strategy report with a 4.69 page frequency as compared to Brazil's 8.25 page frequency. In contrast, as a developing state, Brazil uses strong environmental protection rhetoric as it continually develops its energy industry and leaves a greater GHG and carbon footprint. UNFCCC data shows Brazil increased its GHG emissions by 78.75% from 1990 to 2012. Brazil's discovery of the pre-salt fields forces the government and Petrobras to seek novel strategies for environmental protection as well continued emphasis on its use and development of biomass fuels, specifically ethanol, as legitimization for its concern for the environment. We see this challenge described by Bevins (2011) in his article *Renewables Hit a Wall in South America*, as well as through the 204 usages of the word "environment" and 156 usages of the word "energy efficiency" within Brazil's energy strategy. Both countries and their NOCs seek environmental protection, yet they often hold it to a lesser degree of importance or use it to justify other governmental concerns of energy development and foreign policy objectives, seen through Russia's development of the Arctic (Kramer, 2011) and allegations of Petrobras being used by the government to increase its popularity (Romero, 2013).

Conclusion

In this research article the case studies of Gazprom and Petrobras were used to compare the interaction and relation between NOCs, the state government, and environmental policy. I sought to specifically answer the question of how the policy and interaction between the state government and the NOCs affect sustainable development of the

preservation of the environment. In the literature review, three levels of analysis were identified: the private investor, the local government, and international framework. Following an examination of each of these three, a methodology is developed at the local state level of analysis which models Eduardo Viola's research methodology. Data from the UNFCCC is observed and analyzed alongside reports from an independent news organization, *The New York Times*, and Russia and Brazil's national energy strategies. I conclude that protection of the natural environment is an area of lesser importance to more predominant state goals of energy development and independence and the foreign policy agendas of legitimizing or leveraging the state's energy capabilities towards other nations.

The conclusions reached in this study have implications for environmentalists, private investors, and the international community at large. The relation between NOCs, the state, and environmental concern was developed and analyzed, revealing that public rhetoric of environmental protection often contains underlying political objectives as found through an analysis of the *New York Times* articles.[11] The strong connection between the state and its NOC was also discussed, revealing some risks and challenges faced by outside investors as seen with the tensions between private investors and the Russian government with Gazprom expanding eastward (Koďousková and Jirušek, 2016). Furthermore, it appears both Russia and Brazil seek to stay within the guidelines established by the UNFCCC as seen through Russia's decrease in GHG emissions as an Annex-I member state and Brazil's status as a non-Annex I member state[12] and as also as reflected by their energy strategies and the inclusion of key environmental words.[13] This research is a preliminary step in raising awareness about the issue at hand but is far from achieving a final or definitive voice on the matter. There are various limitations unable to be addressed in this research paper, which prevent a full conclusion being drawn. One such limit is the scope of this work. Although similar in many aspects, there are still numerous differences between Russia and Brazil, which limit an effective comparison between the two and their respective NOCs. Also this project was bound by a specified time frame, which prohibited further research and comparisons between the two case studies. Although I attempted to maintain a neutral view towards Gazprom and Petrobras, it is inevitable that some bias emerged itself in the paper as I anticipated discovering research to support my preconceived notions about each NOC and their governments. Furthermore, when analyzing the *New York Times* articles, one might expect an American newspaper to not

---

[11] Specifically, *New York Times* articles: As Gazprom Goes, So Goes Russia; BP Faces Environment Inquiry in Russia; Russia Cuts Gas, and Europe Shivers; Warming Revives Dream of Se Route in Russian Arctic; Greenpeace Activists May Face Russian Piracy Charges; Russia May be Losing Influence Over European Energy Markets; Melting Ice Isn't Opening Arctic to Oil Bonanza; Brazil, Where Oil and Women Mix Powerfully; Petrobras, Once Symbol of Brazil's Oil Hopes, Strives to Regain Lost Swagger; Scandal Over Brazilian Oil Company Adds Turmoil to the Presidential Race; and Corruption Scandal at Petrobras Threatens Brazil's Economy. Refer to pages 21-30 for complete analysis

[12] Compare statistics referenced in Tables 1 and 2 (UNFCCC, 2012).

[13] Reference Table 4 for word count and frequency of key environmental terms.

positively perceive Russia or its NOC due to recent and historical tensions, thus the conclusions of Brazil's Petrobras holding a better positive perception may be misleading. Despite this limitation, it is still interesting to note the couple of articles where Gazprom still is mentioned favorably. Finally, this project is qualitative in nature and although measures were developed to ensure reliable observations, future study in this topic may draw further information that may affect the methodology of what data was observed and the resulting conclusions. An area of future study would be to expand the number of case studies to other major NOCs and their state governments. Of particular interest would be Canada, other Latin and South American countries, and developing Eastern European and Caucasus nations. Further research could also be developed to the other two levels of analysis not conducted in this study, the private investor and international organizations. Additionally, this research study revealed the significant role of public environmental perceptions as in the case with Brazil's "greening" of Petrobras (Gabrielli, 2009) and international concerns towards Russian expansion into the Arctic as reported by the *New York Times* (Myers, 2013). Yet in conclusion, it is obvious NOCs and states have placed an emphasis on the development of regulation and practices for protection of the environment. However, this environmental concern often holds a much lower level of importance compared to the national agendas of energy development and foreign policy objectives.

References

Alazzani, A., & Wan-Hussin, W. N. (2013). Global Reporting Initiative's Environmental Reporting: A Study of Oil and Gas Companies. *Ecological Indicators, 32*, 19-24. doi:10.1016/j.ecolind.2013.02.019

Barnes, T. (2012, June 21). An earth summit draws on oil, mining and utility largess. *The New York Times*. Retrieved from https://green.blogs.nytimes.com/2012/06/21/an-earth-summit-draws-on-oil-mining-and-utility-largess

Belyi, A. V. (2015). *Transnational gas markets and euro-Russian energy relations*; New York, NY: Palgrave Macmillan.

Bevins V. (2011, October 25). Renewables hit a wall in South America. *The New York Times*. Retrieved from http://www.nytimes.com/2011/10/26/business/energy-environment/renewables-hit-a-wall-in-south-america.html

Braga, L. P., & Szklo, A. S. (2014). The Recent Regulatory Changes in Brazilian Petroleum Exploration and Exploitation Activities. *Journal of World Energy, Law & Business, 7*(2), 120-139. Retrieved from http://0-search.ebscohost.com.library.cedarville.edu/login.aspx?direct=true&db=enr&AN=95114078&site=eds-live

Central Intelligence Agency. (2018). The world factbook: Brazil. Retrieved from https://www.cia.gov/library/publications/the-world-factbook/geos/br.html

Central Intelligence Agency. (2018). The world factbook: Russia. Retrieved from https://www.cia.gov/library/publications/the-world-factbook/geos/br.html

Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the Relation between Environmental Performance and Environmental Disclosure: An Empirical Analysis. *Accounting, Organizations and Society, 33*(4-5), 303-327. doi:10.1016/j.aos.2007.05.003

Dalgaard, K. (2012). *The Energy Statecraft of Brazil: Promoting Biofuels as an Instrument of Brazilian Foreign Policy, 2003-2010*. Retrieved from https://search.proquest.com/docview/1687700298

de Aguiar, Thereza R.S., & Freire, Fatima de Souza. (2017). Shifts in Modes of Governance and Sustainable Development in the Brazilian Oil Sector. *European Management Journal, 35*(5), 701-710. doi:10.1016/j.emj.2017.05.001

Elkington, J. (1998). Partnerships from Cannibals with Forks: The Triple Bottom Line of 21st-Century Business. *Environmental Quality Management, 8*(1), 37-51. doi:10.1002/tqem.3310080106

European Union. (2014). Legislation. *Official Journal of the European Union, 57,* 5. http://eur-lex.europa.eu/eli/reg/2014/960/oj

Gabrielli, d. A. (2009). The Greening of Petrobras. *Harvard Business Review, 87*(3), 43-47. Retrieved from http://0-search.ebscohost.com.library.cedarville.edu/login.aspx?direct=true&db=bth&AN=36589928&site=eds-live

Gazprom (2018). *Eastern gas program*. Retrieved from Gazprom: http://www.gazprom.com/about/production/projects/east-program/

Ghaleb, A. (2011). *Natural gas as an instrument of Russian state power*. Carlisle, PA: Strategic Studies Institute, U.S. Army War College.

Gourevitch, Peter, (1978). The second image reversed: the international sources of domestic politics, *International Organization*, 32(4), 881-912. Retrieved from https://EconPapers.repec.org/RePEc:cup:intorg:v:32:y:1978:i:04:p:881-912_03.

Horch, D. (2015, February 11). Corruption scandal at Petrobras threatens Brazil's economy. *The New York Times*. Retrieved from https://dealbook.nytimes.com/2015/02/11/a-corruption-scandal-at-petrobras-threatens-brails-bond-market-and-economy/

Hourneaux Junior, F., Galleli, B., Gallardo-Vázquez, D., & Sánchez-Hernández, M. I. (2017). Strategic Aspects in Sustainability Reporting in Oil & Gas Industry: The Comparative Case-Study of Brazilian Petrobras and Spanish Repsol. *Ecological Indicators, 72*, 203-214 doi://doi.org/10.1016/j.ecolind.2016.08.007

Kanter, J. (2012, April 18). Guiding Europe toward clean energy. *The New York Times*. Retrieved from http://www.nytimes.com/2012/04/19/business/global/guiding-europe-toward-clean-energy.html

Kasa, S. (2013). The Second-Image Reversed and Climate Policy: How International Influences Helped Changing Brazil's Positions on Climate Change. *Sustainability (2071-1050), 5*(3), 1049-1066. doi: 10.3390/su5031049

Kaya, R. (2016). *Russia's offshore pipe dreams: South Stream, Turkish Stream, and Nordstream II*. Retrieved from Caspian Policy Center: http://www.caspianpolicy.org/report/russias-offshore-pipe-dreams-south-stream-turkish-stream-and-nordstream-ii/

Koďousková, H., & Jirušek, M. (2016). Is Gazprom Pushing East? *Central European Journal of International & Security Studies, 10*(1), 110-133. Retrieved from http://0-search.ebscohost.com.library.cedarville.edu/login.aspx?direct=true&db=tsh&AN=117661561&site=eds-live

Kramer, A. E. (2008, February 27). Gazprom moves into coal as a way to increase gas exports. *The New York Times*. Retrieved from http://www.nytimes.com/2008/02/27/business/worldbusiness/27coal.html

Kramer, A. E. (2008, March 22). BP faces environment inquiry in Russia. *The New York Times*. Retrieved from http://www.nytimes.com/2008/03/22/business/worldbusiness/22oil.html

Kramer, A. E. (2008, May 11). As Gazprom goes, so goes Russia. *The New York Times*. Retrieved from http://www.nytimes.com/2008/05/11/business/worldbusiness/11gaz.html

Kramer, A. E. (2009, January 6). Russia cuts gas, and Europe shivers. *The New York Times*. Retrieved from http://www.nytimes.com/2009/01/07/world/europe/07gazprom.html

Kramer, A. E. (2010, November 15). Gazprom of Russia to drill for oil in Cuban waters. *The New York Times*. Retrieved from http://www.nytimes.com/2010/11/16/business/global/16oil.html?mtrref

Kramer, A. E. (2011, October 17). Warming revives dream of sea route in Russian Arctic. *The New York Times*. Retrieved from http://www.nytimes.com/2011/10/18/business/global/warming-revives-old-dream-of-sea-route-in-russian-arctic.html

Kuczynski, P. P., & Williamson, J. (Eds.). (2003). *After the Washington consensus: Restarting growth and reform in Latin America*. Washington, DC: Institute for International Economics.

McElroy, M. B. (2010). *Energy: Perspectives, problems & prospects*. New York, NY: Oxford University Press, Inc.

McPherson, Charles. (2003). National oil companies evolution, issues, outlook. *National Oil Companies Workshop Current Roles and Future Projects World Bank*. Retrieved from http://siteresources.worldbank.org/INTOGMC/Resources/NOCPaperMcPherson.pdf

Mehlum, H., Moene, K., & Torvik, R. (2006). Cursed by Resources or Institutions? *World Economy, 29*(8), 1117-1131. doi:10.1111/j.1467-9701.2006.00808.x

Ministério de Minas e Energia. (2007). *Plano Nacional de Energia 2030*. Retrieved from http://www.mme.gov.br/documents/10584/1139260/Plano+Nacional+de+Energia+2030+%28PDF%29/ba957ba9-2439-4b28-ade5-60cf94612092?version=1.1

Ministry of Energy of the Russian Federation. (2009). *Energy strategy of Russia: For the period up to 2030*. Retrieved from http://www.energystrategy.ru/projects/docs/ES-2030_(Eng).pdf

Myers, S. L. (2013, September 24). Greenpeace activists may face Russian piracy charges. *The New York Times*. Retrieved from http://www.nytimes.com/2013/09/25/world/europe/greenpeace-activists-face-possible-piracy-charges-in-russia.html

Myers, S. L. & Krauss, C. (2013, October 23). Melting ice isn't opening Arctic to oil bonanza. *The New York Times*. Retrieved from https://www.nytimes.com/2015/09/08/world/europe/melting-ice-isnt-opening-arctic-to-oil-bonanza.html

Paz, M. J. (2015). Institutional Change and State-Owned Enterprises: Reflections from the Petrobras Case Study. *Public Management Review, 17*(6), 791-811. doi:10.1080/14719037.2013.822534

Pereira, E. G. (2016). *Brazilian upstream oil and gas: A practical guide to the law and regulation*. Winchester Walk, London: Globe Law and Business.

Petrobras. (2010). The world money show. *LinkedIn Corporation*. Retrieved from https://www.slideshare.net/petrobrasri/the-world-money-show

Petrobras. (2018). *Pre-Salt*. Retrieved from http://www.petrobras.com.br/en/our-activities/performance-areas/oil-and-gas-exploration-and-production/pre-salt/

Ramirez-Cendrero, J., & Paz, M. J. (2017). Oil Fiscal Regimes and National Oil Companies: A Comparison between Pemex and Petrobras. *Energy Policy, 101*, 473-483. Retrieved from http://0-search.ebscohost.com.library.cedarville.edu/login.aspx?direct=true&db=edswsc&AN=000392768800047&site=eds-live

Reed, S. (2014, August 6). Russia may be losing influence over European energy markets. *The New York Times*. Retrieved from https://www.nytimes.com/2014/08/07/business/international/russia-may-be-losing-influence-over-european-energy-markets.html

Romero, S. (2012, April 10). Brazil, where oil and women mix powerfully. *The New York Times*. Retrieved from http://www.nytimes.com/2012/04/11/business/energy-environment/women-take-the-reins-of-power-as-brazils-energy-industry-expands.html

Romero, S. (2013, March 26). Petrobras, once symbol of Brazil's oil Hopes, strives to regain lost swagger. *The New York Times*. Retrieved from http://www.nytimes.com/2013/03/27/world/americas/petrobras-brazils-oil-giant-struggles-to-regain-lost-swagger.html

Romero, S. (2014, October 19). Scandal over Brazilian oil company adds turmoil to the presidential race. *The New York Times*. Retrieved from https://www.nytimes.com/2014/10/20/world/americas/scandal-over-brazilian-oil-company-petrobras-adds-turmoil-to-the-presidential-race.html

Silvestre, B. S., Gimenes, F. A. P., & Neto, R. e. S. (2017). A Sustainability Paradox? Sustainable Operations in the Offshore Oil and Gas Industry: The Case of Petrobras. *Journal of Cleaner Production, 142*, 360-370. Retrieved from http://0-search.ebscohost.com.library.cedarville.edu/login.aspx?direct=true&db=edswsc&AN=000391897300034&site=eds-live

United Nations Climate Change. (2014). *Background on the UNFCCC: The international response to climate change*. Retrieved from http://unfccc.int/essential_background/items/6031.php

United Nations Climate Change. (2014). *Definitions*. Retrieved from http://unfccc.int/ghg_data/online_help/definitions/items/3817.php

United Nations Climate Change. (2014). *First steps to a safer future: Introducing the United Nations Framework Convention on Climate Change*. Retrieved from http://unfccc.int/essential_background/convention/items/6036.php

United Nations Climate Change. (2010). *Non-Annex I national communications*. Retrieved from http://unfccc.int/national_reports/non-annex_i_natcom/items/2819.php

United Nations Framework Convention on Climate Change (2012). *Doha amendment to the Kyoto Protocol*. Retrieved from http://unfccc.int/files/kyoto_protocol/application/pdf/kp_doha_amendment_english.pdf

United Nations Framework Convention on Climate Change (2016). *Essential background*. Retrieved from http://unfccc.int/essential_background/items/6031.php.

United Nations Framework Convention on Climate Change (2018). *Emissions summary for Brazil*. Retrieved from http://di.unfccc.int/ghg_profile_non_annex1

United Nations Framework Convention on Climate Change (2018). *Summary of GHG emissions for Russian Federation*. Retrieved from http://di.unfccc.int/ghg_profile_annex1

Vavilov, A. (2015). *Gazprom: An energy giant and its challenges in Europe*. New York, NY: Palgrave Macmillan.

Vinocur, J. (2012, October 18). The E.U. goes after Gazprom. *The New York Times*. Retrieved from http://www.nytimes.com/2012/10/19/opinion/the-eu-goes-after-gazprom.html

Viola, E., & Franchini, M. (2013). Brasil na Governança Global do Clima, 2005-2012: A Luta entre Conservadores e Reformistas. (Portuguese). *Contexto Internacional, 35*(1), 43. Retrieved from http://0-search.ebscohost.com.library.cedarville.edu/login.aspx?direct=true&db=edb&AN=93640399&site=eds-live